

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office (BRRO)

INTRA-AGENCY MEMORANDUM

Permit Writer	Pamela J. Derk			
Memo To	Air Permit File	Date	DRAFT	
Facility Name	DOC – Nottoway Correctional Center			
Registration Number	30780			
County-Plant I.D.	135-00029			
UTM Coordinates (Zone 17)	750.7	Easting (km)	4118.8	Northing (km)
Elevation (feet)	480			
Distance to Class I Areas	>10K	SNP (km)	>10K	JRF (km)
FLM Notification (Y/N)	N	Required if less than 10K (minor), 100K (state major)		
NET Classification (A, SM, B)	SM	Before permit action	SM	After permit action
Title V Major Pollutants	none	Before permit action	none	After permit action
PSD Major Source (Y/N)	N	Before permit action	N	After permit action
PSD Major Pollutants	None	Before permit action	none	After permit action

I. Introduction

The Department of Corrections (DOC) – Nottoway Correctional Center (NCC) is located in Burkeville, in Nottoway County, Virginia. The facility is a medium security adult prison which operates a wood furniture assembly plant (frame building and upholstery adhesive), and three (3) 9.6 MMBtu/hr Kewanee coal-fired boilers used for space heat. A small 0.67 MMBtu/hr LPG boiler also is used in the woodworking area for steam production for wood bending. The facility currently utilizes 9 generators for emergency use which are approved for participation in the Emergency Load Response Program (ELRP).

Permit History:

NCC was originally permitted for the furniture shop and boilers on April 7, 1983 as a Greenfield source, under minor new source emission control standards prevalent at that time. Subsequently, the facility underwent minor modifications for its woodworking operations, with an NSR issued September 18, 2002 as amended July 8, 2008, removing the boiler opacity monitor requirements, as EPA guidance allows for visual opacity checks as a surrogate for opacity monitor for small package boilers. Seven on-site emergency generators were identified in the facility's 09/18/02 NSR engineering analysis.

The exclusionary general permit (EGP) issued December 1, 1997 (modified February 2, 1999) which was designed to keep the facility under 50% of Title V major source threshold levels has been rescinded because operating limits were too restrictive for SO₂ emissions.

The facility was granted a minor NSR exemption for the emergency generators and approval to participate in PJM's Emergency Load Response Program (ELRP) on May 25, 2011.

Current Permit Action:

Over time, the facility has added and replaced generators for a total of 9, with the most recent

application identifying each individual generator, date of manufacture and installation. According to the facility, the most recent generator replacement occurred in 2012, after the approval for ELRP. Before this disclosure, these emergency generators were not originally evaluated through a formal minor NSR permitting determination each time generators were added or replaced.

The facility's most recent NSR amendment, dated 7/8/08, includes the plantwide SO₂ limit, most likely calculated for the boiler coal consumption. Although actual SO₂ emissions have not surpassed major source (100 tpy) levels, the facility's plant wide PTE for SO₂ could have potentially been above the 100 tpy threshold without federally-enforceable restrictions on the boilers and generators combined. The facility's permit application and request, dated 6/28/12, includes operational limitations for their generators, such as designation as emergency generators and use of low sulfur fuel (0.02% sulfur content by weight). The application was deemed complete on July 18, 2012. In following discussions with DEQ staff, the facility also requested to restrict boiler coal usage such that resulting PTE remains below SM 80% status. The permit would also include the 5/25/11 NSR designation as participating in the ELRP as the area's Independent System Operator (ISO).

This permit action will be processed as a combination state operating permit (SOP) and minor new source review (NSR) permit significant amendment. State operating permit citations are necessary to allow inclusion of low sulfur fuel use for generators and limitations for HAPs to ensure the facility's <SM 80% status, as discussed in sections III.A. and B. This permit action also adds language specific to the facility participating in the ELRP, and designates each as an emergency generator otherwise limited to 500 hours per year operation.

II. Emission Unit(s) / Process Description(s)

Equipment permitted prior to the date of this permit				
Reference No.	Equipment Description	Rated Capacity	Federal Requirements	Original Permit date
WS2, SW3	DeVilbiss VJA 560 spray guns	4.0 gallon/hr, each	None	01/03/2002
B-1, B-2, B-3	3 Kewanee coal-fired boilers	9.6 MMBtu/hr, each	40 CFR 63 Subpart JJJJJ	04/07/1983
WS1	Various woodworking equipment, including one wood waste collection / transfer system	N/A	None	4/7/1983

Additional Equipment installed at the facility				
Reference No.	Equipment Description	Rated Capacity	Federal Requirements	Manufacture / Install Date
LPG1	Small LPG-Fired boiler for steam / Woodworking	0.67 MMBtu/hr		1983
G1	Caterpillar 3406 Generator	375 BHP / 250 kW	40 CFR 63 Subpart ZZZZ	1982 / 1984
G2	Caterpillar 3406 Generator	375 BHP / 250 kW	40 CFR 63 Subpart ZZZZ	1982 / 1984
G3	Koehler 250 R 02281 Generator	390 BHP / 250 kW	40 CFR 63 Subpart ZZZZ	1986 / 1988
G4	Koehler 500 REOZJB Generator	565 BHP / 500 kW	40 CFR 60 Subpart IIII & 40 CFR 63	2011/ Jan. 2012

			Subpart ZZZZ	
G5	Caterpillar 3412 Generator	545 BHP / 350 kW	40 CFR 63 Subpart ZZZZ	1982 / 1984
G6	Koehler 100REZJB Generator	190 BHP / 100 kW	40 CFR 63 Subpart ZZZZ	2003 / 2004
G7	Caterpillar 3412 Generator	545 BHP / 350 kW	40 CFR 63 Subpart ZZZZ	1982 / 1984
G8	Koehler 350RE02V Generator	545 BHP / 350 kW	40 CFR 63 Subpart ZZZZ	2003 / 2004
G9	Caterpillar 3406 Generator	519 BHP / 350 kW	40 CFR 63 Subpart ZZZZ	1995 / 1995

III. Regulatory Review

A. 9 VAC 5 Chapter 80, Part II, Article 6 – Minor New Source Review

As stated in 9 VAC 5-80-1110 C, a modification requires a physical or operational change to the source that will increase the uncontrolled emission rate. The addition of generators is considered a physical and/or operational change; therefore at this time the generators will be evaluated with to regard the new/modified minor source regulations that were in place at the time of each unit's installation.

Generators G1, G2, G4 (originally 750 HP), G5 and G7 were each reported to have been installed in 1984. At that time, emergency generators were not subject to evaluation under provisions for minor new source review.

G3 was added in 1988 and is rated at 390 HP. G9 was added in 1995 and is rated at 519 HP; The addition of each generator was exempt from Article 6 permitting requirements by virtue of increased potential emissions. G6 and G8 were added in 2004, combined 735 HP. According to 9 VAC 5-80-1320 B.2.b., diesel engines with an aggregate rated brake (output) horsepower of less than 1,675 HP used for emergency purposes only and do not exceed 500 hours of operation per year at a single stationary source are exempt from permitting requirements, therefore also exempt under 9 VAC 5-80-1100.C.

G4 was replaced with a 565 HP generator in 2012. By virtue of size and emissions, it is also exempt from Article 6 permitting.

The facility has requested these generators be designated as emergency generators (<500 hrs/yr operation) and have been treated as such in calculations.¹

All generators at the facility are subject to MACT ZZZZ, which is a federal requirement not currently delegated to Virginia (See Section III.E.) Replacement generator G4, which was manufactured in 2011, is subject to NSPS IIII (See Section III.C.)

The small LPG (propane) fired boiler that provides steam for the woodworking shop was installed in 1983. By virtue of size (0.67 MMBtu/hr) and fuel, it is considered exempt from

Article 6 permitting. Particulate emissions from woodworking and VOC / HAP emissions from coating and adhesive operations are not affected by this action.

B. 9 VAC 5 Chapter 80, Part II, Article 5 – State Operating Permit (SOP)

This permit action meets the criteria of 9 VAC 5-80-800.C.1.b. for a state operating permit (SOP). A permit may be issued under this article at the request of the owner to designate a stationary source as a synthetic minor and to combine stationary source requirements into one permit.

With this permit action, the facility is requesting the addition of conditions limiting generator/engine fuel to low-sulfur diesel (0.02%), because this is what the state contract provides. The SOP action is necessary for the following reasons:

- for the purpose of ensuring source remains a synthetic minor (SM<80%) for SO₂;
- because the requirement is new to this permit; and
- because the limitation is not otherwise required by Virginia Regulations.

The source is electing to further limit coal throughput to the boilers (From 6300 tons/yr to 4650 tons/yr) in order to ensure staying below SM80 status for SO₂. The facility is also including plant wide limits for hazardous air pollutants (HAPs) to below SM80 thresholds. The choice to limit plant wide emissions to below SM80 status is for annual emission inventory and fee purposes, and must be included in a federally-enforceable permit. Article 5 SOP citations were added throughout this combination NSR/SOP permit to identify conditions where SOP regulatory authority is a basis for the limitation/requirement. For conditions simply brought forward from previous minor NSR permits only minor NSR citations have been included.

TOTAL PLANTWIDE EMISSIONS WITH SOP limitations (Coal-fired Boilers, LPG boiler & Emergency Generators)	
POLLUTANT	Proposed Tons/year
PM	27.39
PM-10	16.37
SO ₂	78.62
NO _x	52.25
CO	34.28
VOC	4.04

Public participation requirements to make the SOP portions of this permit federally-enforceable are discussed in Section X.

C. 9 VAC 5 Chapter 50, Part II, Article 5 – NSPS

- Boilers 1-3 are manufactured prior to applicability dates contained in NSPS – 40 CFR 60 Subpart Dc - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units.
- Generators G1, G2, G3, G5, G6,G7,G8 and G9 are manufactured prior to applicability dates contained in NSPS – 40 CFR 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI-ICE). Generator G4 was manufactured in 2011 and installed in 2012, therefore the requirements of 40 CFR 60 Subpart IIII apply to this generator. Virginia has not accepted delegation of 40 CFR 60 Subpart IIII, therefore this permit will not contain the applicable requirements or incorporate by reference the provisions of this subpart. The cover letter of this permit serves to notify the facility of the responsibility to comply with the provisions of the CI-ICE NSPS.

D. 9 VAC 5 Chapter 60, Part II, Article 1 – NESHAPS

There are no requirements pursuant to 40 CFR 61 (NESHAPS) that apply to the facility.

E. 9 VAC 5 Chapter 60, Part II, Article 2 – MACT

- Generators are subject to the existing source requirements contained in 40 CFR 63 Subpart ZZZZ - National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT). Virginia has not accepted delegation of the area source provisions of 40 CFR 63 Subpart ZZZZ, therefore this permit will not contain the applicable requirements or incorporate by reference the provisions of this subpart. The cover letter of the permit serves to notify the facility of the responsibility to comply with the provisions of the RICE MACT.
- The facility is subject to requirements for area source boilers under 40 CFR 63 – Subpart JJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters – Area Sources. Virginia has not accepted delegation of this subpart; therefore this permit will not contain the applicable requirements or incorporate by reference the provisions of this subpart. The cover letter of the permit serves to notify the facility of the responsibility to comply with the provisions of the Area Source Boiler MACT.

F. State Only Enforceable (SOE) Requirements (9 VAC 5-80-1120 F)

Not applicable.

IV. Best Available Control Technology Review (BACT)

A. Requirements of 9 VAC 5-50-260

This action is for a combined SOP/minor NSR significant amendment. Neither of the permit types requires a BACT review under 9VAC5-50-260. BACT requirements established during previous NSR approvals have not been relaxed as a result of this action and associated limit/requirements have been brought forward into this permit.

As shown in Section III.A., the emergency generators were evaluated for new source review permit applicability and determined to be exempt therefore BACT does not apply to any of these units.

V. Summary of Actual Emissions Increase/Decrease:

The facility utilizes coal for heat during the winter months, and has historically used less than 1,000 tons per year. The proposed fuel throughput of 4,650 tons/yr (previously 6,200 tons/yr) carries over the 1% sulfur content and 7% ash content requirement from previous NSR approval, and allows for maximum throughput while potential emissions remain below SM80 levels. The facility's plant wide PTE from coal burning contribution is shown in attached calculations.¹

VI. Dispersion Modeling

Modeling is not required for the SOP.

No criteria pollutants nor HAP emission levels were triggered above minor NSR exemption levels for the generators, therefore modeling is not necessary.

¹ See attached spreadsheet "30780 NSR-SOP SM80 boiler calcs".

VII. Boilerplate / Deviations

This permit was prepared using the latest version of the boilerplate for a state operating permit and minor NSR, with generic boilerplate conditions used for minor NSR permit citations (Conditions 1 and 9). Hybrid conditions were added for participation in the ELRP program (Conditions 13 and 22c.). HAP emissions are limited further for <SM80 status in Condition 18.

VIII. Compliance Demonstration

A full compliance inspection of the facility was last conducted on August 12, 2010 with the facility found to be in compliance with 7/8/08 NSR permit conditions. This permit action contains the following limits and recordkeeping / reporting requirements sufficient to demonstrate compliance with new SOP permit conditions:

- Fuel type and usage recordkeeping requirements for boilers;
- Fuel type recordkeeping requirements for generators;
- Fuel supplier certifications; and
- Hours of operation for emergency generators;

Virginia has not accepted delegation of the CI-RICE regulations contained in NSPS – 40 CFR 60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. The source is responsible for all applicable compliance and notification requirements.

As previously stated, the State has not accepted delegation of the area source reciprocal internal compression engines (RICE) MACT - (40 CFR 63, Subpart ZZZZ), and the source is responsible for all applicable compliance and notification requirements.

Additionally, Virginia has not accepted delegation of authority for the area source boiler MACT (40 CFR 63, Subpart JJJJJ), therefore the source is responsible for all applicable compliance and notification requirements.

The cover letter of the permit instructs the permittee that all written notifications required by 40 CFR 60 Subpart IIII, 40 CFR 63, Subparts ZZZZ and A, and 40 CFR Subpart JJJJJ and A shall to be sent to EPA Region III.

IX. Title V Review – 9 VAC 5 Chapter 80 Part II Article 1

This SOP effectively limits the PTE for any pollutant to less than the respective Title V major source threshold and below the SM80 levels for Title V maintenance fee. Title V permitting does not apply.

X. Other Considerations

A. Public Notice:

This State Operating Permit must proceed through a public participation period of 30 days. The notice will be (was) published in the {newspaper} on {date}. The comment period begins on that day and ends on {date}.]

B. Fees:

Permit application fees did not apply since the facility's application was submitted on 6/29/12, prior to 7/1/12. According to 9 VAC 5 Part II, Article 11 (Annual Permit Maintenance Fees for Stationary Sources), effective 7/1/12, annual fees apply for synthetic minor facilities over 80% PTE of being a major source. This permit action effectively limits the facility's PTE to below SM80 status (<80% of major source threshold levels) for criteria pollutants and HAPs.

XI. Recommendations

Approve draft permit.

Attachments:

- Plant wide potential-to-emit calculations and resulting emissions from decreased allowable coal throughput (for SM80 status) & plantwide summary: file: 30780 NSR-SOP SM80 boiler calcs
- Generators PTE at 500 hours/yr with low sulfur diesel (0.02% sulfur) and 0.5% S: file: DIESEL_ENG 500 hr reg & low sulfur.
- LPG boiler PTE calculations: file 30780 NSR-SOP LPG boiler calcs.